

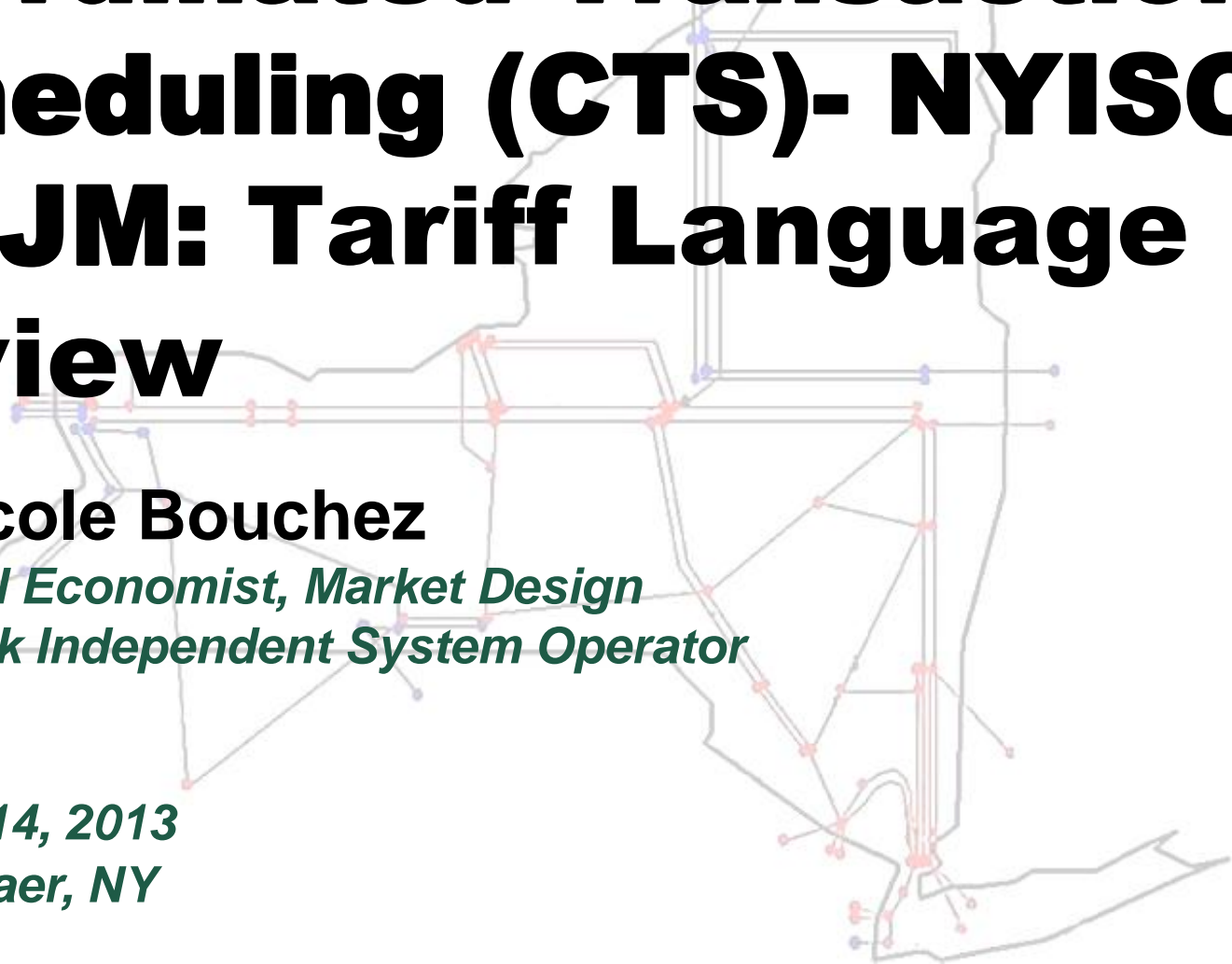
Coordinated Transaction Scheduling (CTS)- NYISO & PJM: Tariff Language Review

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BIC

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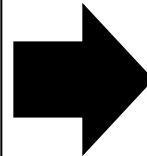
Proposal Summary

- ◆ **Bidding: Multiple bidding/scheduling options:**
 - *Hourly evaluations of traditional wheel-through transactions (existing)*
 - *Intra-hour evaluations of traditional LBMP Bid/Offers (existing)*
 - *Intra-hour evaluations of CTS Interface Bid/Offers (new).*
- ◆ **Bidding: Intra-hour LBMP Bids and Intra-hour CTS Interface Bids may have up to four distinct bid \$/MW pairs, one for each 15-minute scheduling interval of the hour.**
- ◆ **Scheduling: Intra-hour schedules established 15-minutes sooner than current intra-hour scheduling process.**
- ◆ **Scheduling: CTS Interface bids will be scheduled based on the projected price difference between PJM and NYISO at the interface.**

Bidding

Current:

- Import/export LBMP Bid: hourly
- Import/export LBMP Bid: 15 minute using “second time step”
- Wheel Bids : hourly



Proposed:

- Import/export LBMP Bid: 15 minute using “first time step”
- Import/export CTS Interface Bid: 15 minute using “first time step”
- Wheel Bids: hourly

- ◆ **With CTS we will be able to offer an earlier evaluation of LBMP Bids because we will use the “first time step” rather than the “second time step” of the NYISO RTC**
- ◆ **CTS interface bids/offers allow schedules to be based on the price differences projected by PJM and NYISO instead of relying on the marketer’s assumptions about market conditions in the neighboring control area to provide an LBMP bid/offer.**

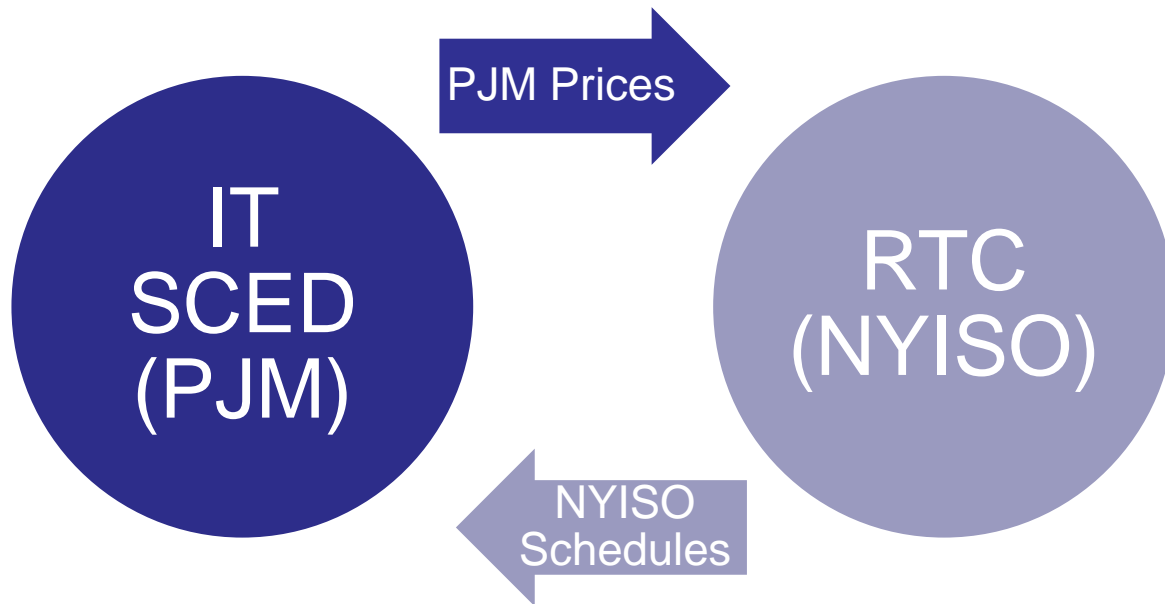
Incorporate PJM's Supply Curve

- ◆ **In Real Time, NYISO will use the real-time and look-ahead prices resulting from PJM's existing SCED processes as the basis for determining which CTS Interface bids should be scheduled.**
 - ***The NYISO economic evaluation would schedule CTS Interface bids/offers that would be profitable given the projected prices at the interface.***
 - ***In practice, that means that each CTS Interface bidder identifies the price difference between PJM and NYISO's projected prices above which they want the transaction to flow.***
 - **To accomplish this evaluation, the CTS Interface bid/offer will be converted into a traditional LBMP bid (by adding/subtracting the CTS Interface bid/offer to PJM's projected proxy bus price) for consideration in NYISO's current economic scheduling software along with other, non-CTS Interface bids**

Scheduling Process

- ◆ **The scheduling process will leverage PJM’s existing Intermediate Term Security Constrained Economic Dispatch (IT SCED) that has a 2 hour look-ahead capability.**
- ◆ **The most recently available information on prices from IT SCED will be used by the Real Time Commitment (RTC) in the “first time step” as well as in the advisory schedules.**
- ◆ **Each RTC will also provide information on expected advisory schedules to PJM. That information will be used in subsequent IT SCED runs.**

How it will work



In Real Time,

- ◆ NYISO will incorporate PJM's forward looking prices into its existing scheduling process for the purpose of evaluating CTS bids.
- ◆ PJM will incorporate advisory schedules from NYISO's scheduling process for the purpose of determining its forward-looking prices.

Benefits of CTS- Step 1

- ◆ **Benefits are achievable with relatively small changes in interchange**
 - *To show how the mechanism results in increased efficiency, PJM and NYISO performed a first phase analysis three hours when there were price differences between PJM and New York and calculated the increased flow necessary to (approximately) equalize prices between PJM and New York.*
 - *Three hours were chosen based on hourly real time prices differences between NY and PJM at the interface.*
 - *RTD and SCED were rerun to determine what the change in schedule would be that would approximately equalize the prices in NY and PJM.*
 - *350MW to 440MW of flow approximately equalized a price difference of \pm \$30 to \$100.*

Supply Curve Based Analysis

- ◆ **PJM used hourly average prices for PJM and NYISO for the time period from January through December 2012 in conjunction with supply curves to approximate how many MWs would need to be moved in each ISO to simulate various price alignment scenarios (\$5 difference, \$10 difference, \$15 difference)**
- ◆ **Data Used in Analysis**
 - *PJM monthly Supply curves*
 - *NYISO monthly Supply curves*
 - *PJM and NYISO Hourly LMPs*

Iterative Approach

- ◆ An iterative approach was used to determine the movement each ISO would make along their supply curve to decrease price separations between the areas
- ◆ To increase the operational reality of this approach, this calculation restricts the MW that each area will adjust from the original starting point
 - *200 MW, 300 MW, and 400 MW restrictions were imposed from the original starting point*
- ◆ The results from each trial produced cost reductions for both PJM and NYISO

Cost Benefit Analysis Results

200 MW Restriction			
	<i>\$5 Scenario</i>	<i>\$10 Scenario</i>	<i>\$15 Scenario</i>
<i>PJM</i>	\$8,230,774	\$7,175,130	\$5,932,766
<i>NYISO</i>	\$5,295,982	\$3,531,881	\$2,971,989
<i>TOTAL</i>	\$13,526,755	\$10,707,010	\$8,904,755

300 MW Restriction			
	<i>\$5 Scenario</i>	<i>\$10 Scenario</i>	<i>\$15 Scenario</i>
<i>PJM</i>	\$12,019,419	\$10,557,342	\$8,770,504
<i>NYISO</i>	\$7,968,964	\$5,273,887	\$4,386,418
<i>TOTAL</i>	\$19,988,383	\$15,831,229	\$13,156,922

400 MW Restriction			
	<i>\$5 Scenario</i>	<i>\$10 Scenario</i>	<i>\$15 Scenario</i>
<i>PJM</i>	\$15,703,931	\$13,883,108	\$11,555,548
<i>NYISO</i>	\$10,555,156	\$6,922,806	\$5,738,145
<i>TOTAL</i>	\$26,259,087	\$20,805,915	\$17,293,692

Bid Guarantees/Make Whole Payments

- ◆ PJM and NY will both change their Make Whole Payments for external transactions:
- ◆ PJM will not provide make whole payments for CTS transactions.
- ◆ NYISO will not provide make whole payments (BPCGs and Import Curtailment Guarantees) for RT CTS transactions and LBMP transactions with PJM.
 - *This is consistent with transactions with ISO NE where fees have been eliminated with CTS.*
 - *The NYISO is moving the evaluation of transactions (RT LBMP bids and CTS bids) from the second time step to the first time step reducing latency risk.*
 - *It would not be appropriate to protect some RTC scheduled 15 minute transactions from latency and not others.*
 - *Currently, in NY, only 15 minute scheduled transactions with PJM are eligible for BPCGs.*
 - *RT BPCGs at the PJM interface (Keystone, Neptune and Linden) in 2012 total \$952,145 and in 2013 through April total \$43,341.*
 - *Import Curtailment Guarantees at the PJM interface (Keystone, Neptune and Linden) in 2012 Total \$172,030 and in 2013 through May total \$113,578.*

Cross-Border Transaction Fees

- ◆ **The Coordinated Transaction Scheduling (CTS) project did not initially include the elimination of fees allocated to external transactions.**
- ◆ **Stakeholders asked PJM and NYISO to revisit this issue.**
- ◆ **PJM currently does not support the elimination of Schedule 7 and 8 Fees (i.e. Regional Through and Out Rates) until NYISO and PJM reach additional agreements on Interregional Planning and Regional Transmission Enhancement Cost Allocation**
 - *Maintains the realization of benefits from transmission system upgrades by the RTO funding the upgrades*
 - *PJM and NYISO are continuing discussions but no date certain at this point on when an agreement may be reached*

Cross-Border Transaction Fees (2)

- ◆ **PJM proposed the exemption of BOR charges for CTS transactions at the June 25th Joint Stakeholder Meeting.**
- ◆ **PJM withdrew this proposal based on feedback received from PJM stakeholders**
 - *PJM will continue to work with its stakeholders separately on the BOR fees initiative*
- ◆ **The NYISO supports the reciprocal elimination fees allocated to external transactions. Given PJM's proposal has been withdrawn, the NYISO will not eliminate the equivalent fees in NY (these are BPCG/Make Whole fees)**
- ◆ **The NYISO will continue to work with PJM on the reciprocal elimination of fees.**

Required Tariff Changes – MST Attachment K

- ◆ **Credit policy for CTS Interface Bids developed at CPWG.**
- ◆ **Upon submission of a CTS Interface Bid to Export**
 - *Bids will not be evaluated for credit.*
- ◆ **At HAM market close of the CTS hour bid**
 - *Credit exposure will be calculated for each 15-minute interval within the bid hour using the most recently available RTC price for that interval as the price point.*
- ◆ **Upon completion of the bid hour in real-time until the net amount owed to the ISO is determined for settled External Transactions**
 - *Consistent with the existing method of calculating the credit requirement for real-time export bids, CTS Bids will be evaluated using the scheduled MWhs and the Real-Time LBMP price.*
- ◆ **Proposed credit policy presented at 7/31/2013 CPWG**
 - *Tariff changes included in BIC posting.*

Timeline

- ◆ **Proposed Implementation Timeline**
 - *Fall 2013: Market Design Approved*
 - *Fall 2014: Implement*
- ◆ **Joint stakeholder meetings:**
 - *Four meetings have been held (November 2012, February, April and June 2013)*
 - *A joint Benefits Assessment teleconference was held July 10 2013.*
- ◆ **Each ISO/RTO will pursue tariff changes, as needed, with their stakeholders.**
 - *Filing expected Q4 2013*
 - *NYISO has presented the tariff changes at the MIWG May 24, June 6, June 28 and July 24 meetings.*

Tariff Changes

- ♦ We can leverage all the drafting that was done for CTS with ISO NE so the changes are not extensive however the revisions impact a number of sections.
- ♦ Revisions are included to the following tariff sections:
 - *MST 2.2 – Definitions – B,*
 - *MST 2.3 – Definitions – C,*
 - *MST 2.9 – Definitions – I,*
 - *MST 2.16 – Definitions – P,*
 - *MST 4.4 – Real-Time Markets and Schedules,*
 - *MST 26.4 – Credit Changes,*
 - *MST 31 – Changed only the title to clarify that this section applies to CTS with ISO NE only,*
 - *OATT 1.2 – the equivalent to MST 2.2 (Definitions – B),*
 - *OATT 1.3 – the equivalent to MST 2.3 (Definitions – C),*
 - *OATT 1.16 – the equivalent to MST 2.16 (Definitions – P),*
 - *OATT 6.1 ,6.2, and 6.5 – these sections relate to fees and charges,*
 - *OATT 16.3 – Requests for Bilateral Transaction Schedules,*
 - *OATT 35 – the Joint Operating Agreement Between NYISO and PJM Interconnection,*
 - OATT 35.2 Abbreviations, Acronyms, Definitions and Rules of Construction,
 - OATT 35.7 Exchange of Information,
 - OATT 35.12 Added a description of CTS,
- ♦ **Tariff effectiveness:** we will be filing to make these tariff sections effective when FERC approves the filing with the exception of MST 31 and OATT 6.1, 6.2 and 6.5 which should become effective with CTS with ISO NE goes live.

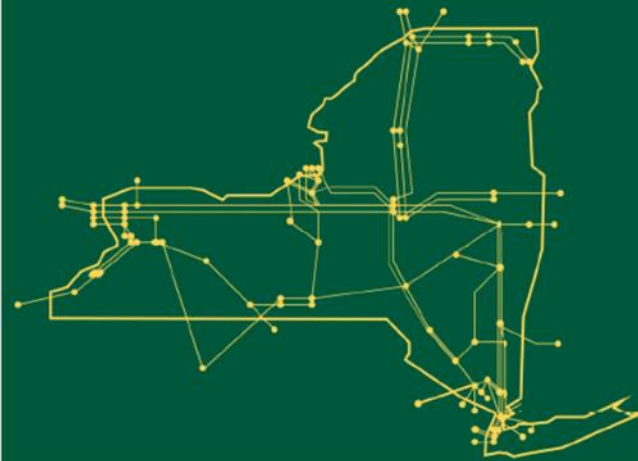
Reviewing Tariff Changes

- ◆ **Changes & Additions from the presentation at the July 24 MIWG**
 - ***OATT 6.1, 6.2 and 6.5 –***
 - Revised to only show the proposed changes (and not the previously accepted changes).
 - ***OATT 35 – The Joint Operating Agreement Between NYISO and PJM Interconnection***
 - Revised the definitions to remove OATT defined terms that are not defined in the JOA.
 - Expanded the description of CTS.
 - ***MST 4.4 Real-Time Markets and Schedules,***
 - Updated to show all the Proxy Generator Buses with PJM as “Permits CTS Bids.”
 - ***MST 26.4 – Credit Changes***
 - The changes to the credit rules as discussed CPWG.

Next Steps:

- ◆ **BIC Motion**
- ◆ **MC vote August 28**
- ◆ **Filing expected Q4 2013**

The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.



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